Application Number	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10/733,995	GHASEMI ET AL.
	Examiner	**Art Unit**
	Douglas C. Godbold	2626

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,995	12/11/2003	Reza Ghasemi	BOC9-2003-0102 (1082-5U)	2044

46320 7590 10/10/2007

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ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
10/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,995	GHASEMI ET AL.	
	Examiner	Art Unit	
	Douglas C. Godbold	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *06 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to correspondence filed August 6, 2007 in reference to application 10/733,995. Claims 1-16 are pending in the application and have been examined.

Response to Amendment

2. The amendments to the claims filed August 6, 2007 have been accepted and considered in this office action. Claim 7 has been amended.

Response to Arguments

Applicant's arguments with respect to claims 1, 7, and 13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 16 is written as dependent of claim 1. However, the language of the claim would, and the fact that these limitations are already covered by claim 6, suggest that this claim should in fact be dependent of claim 13 instead, and will be considered as such for purposes of examination. Appropriate correction is required.

4. Claims 8-12 are objected to as they refer to the machine readable storage of claim 7, however claim 7 has been amended to read computer program product and not machine readable storage. Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 7-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 7 attempts to claim a computer program product. However this could be interpreted to be just, considered non-statutory under 35 U.S.C. 101. Therefore claim 7 is rejected as well as claims 8-12 as being dependent of claim 7.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 4, 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan et al. (US Patent 7,117,153) in view of in view of Yuschik (US Patent 7,139,706).

9. Consider claim 1, Mahajan teaches a method of evaluating the quality of voice input recognition by a voice system (figure 2, shows a method for evaluating recognition

in a voice system such as figure 1, connected to Wide area Network 173, that could be used to access data.), said method comprising the steps of:

extracting a current grammar (text words in the recognition model to be evaluated) from the voice portal (a portion of training text is selected to be spoken 304, Figure 3, Column 5 line 11.);

generating a test input for the current grammar, the test input including a test pattern and a set of active grammars for the current grammar (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal, in order to test the recognition models; Column 5 line 11.);

providing the test input to the voice system (voice recognition system software) (The acoustic signal is converted into waveforms by receiver 309 and feature extractor 310, and the feature vectors are provided to a decoder 312; column 5 lines 13-15.);

analyzing the test pattern with respect to the set of active grammars with a speech recognition engine in the voice system (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37.); and

deriving a measure of quality of recognition for the current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.).

But Mahajan does not specifically teach that the voice system is a voice portal.

In the same field of speech systems, Yuschik teaches that the voice system is a voice portal (It is an object of the invention to design and select the vocabulary for a voice activated system (portal) column 3, line 7-20. The menus of the portal are shown in figure 4.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention for a voice portal to be the voice system being tested and developed as taught by Yuschik with the testing system of Mahajan in order to allow for voice portals to be adapted to the users spoken languages, Yuschik column 2 line 57.

10. Consider claim 3, Yuschik teaches the method of claim 1, comprising the steps of:

modifying the current grammar to create a modified grammar (word list to be used for recognition) if the measure of quality of recognition for the current grammar deviates from a pre-determined range (figure 3, step 340 does an acoustic analysis to determine similarity in order to reduce recognition error, step 350 selects alternative words if necessary, thereby providing a less confusable alternative to the words available to be recognized; column 11 line 34- column 13 line 3).

11. Consider claim 4, Mahajan in view of Yuschik suggests the method of claim 3, further comprising the steps of:

(i) generating a test input for the modified grammar, the test input including a test pattern and a set of active grammars for the modified grammar;

(ii) providing the test input for the modified grammar to the voice portal;

(iii) analyzing the test pattern for the modified grammar with respect to the set of active grammars corresponding to the modified grammar with the speech recognition engine in the voice portal;

(iv) deriving a measure of quality of recognition of the modified grammar; and

(v) re-modifying the modified grammar and repeating steps (i) through (iv) until the measure of quality of recognition of the modified grammar does not deviate from a pre-determined range.

This is merely reanalyzing the output of the recognizer after the grammar has been updated. Figure 3 of Yuschik shows that the acoustical analysis of 340 is repeated until the acoustical difference is great enough to allow for accurate speech recognition. These analysis steps (i-iv) are the same of claim 1, which can clearly be accomplished by the method of Mahajan as discussed above, and acoustical distance would obviously effect the result of the analysis. This step would be useful to determine the recognizably of any alternative words entered into the grammar by the modifying step, thereby insuring that the change increased the performance of the recognizer.

12. Consider claim 7, Mahajan teaches a computer program product (figure 1 shows memories 141, 151, 152, 155, and 156 capable of storing the computer code) for evaluating the quality of voice input recognition by a voice system (figure 2, shows a method for evaluating recognition in a voice system such as figure 1, connected to Wide area Network 173, that could be used to access data.), said computer program product

comprising computer usable program code including a routine set of instructions which when executed by a machine cause the machine to perform the steps of:

extracting a current grammar (text words in the recognition model to be evaluated) from the voice system (a portion of training text is selected to be spoken 304, Figure 3, Column 5 line 11.);

generating a test input for the current grammar, the test input including a test pattern and a set of active grammars for the current grammar (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal; Column 5 line 11.);

providing the test input to the voice system (speech recognition system of figure 1) (The acoustic signal is converted into feature vectors by receiver 309 and feature extractor 310, and the feature vectors are provided to a decoder 312; column 5 lines 13-15.);

analyzing the test pattern with respect to the set of active grammars with a speech recognition engine in the voice system (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37.); and

deriving a measure of quality of recognition for the current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.)

But Mahajan does not specifically teach that the voice system is a voice portal.

In the same field of speech systems, Yuschik teaches that the voice system is a voice portal (It is an object of the invention to design and select the vocabulary for a voice activated system (portal) column 3, line 7-20. The menus of the portal are shown in figure 4.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention for a voice portal to be the voice system being tested and developed as taught by Yuschik with the testing system of Mahajan in order to allow for voice portals to be adapted to the users spoken languages, Yuschik column 2 line 57.

13. Consider claim 9, Yuschik teaches the machine readable storage of claim 7, comprising the steps of:

modifying the current grammar to create a modified grammar (word list to be used for recognition) if the measure of quality of recognition for the current grammar deviates from a pre-determined range (figure 3, step 340 does an acoustic analysis to determine similarity in order to reduce recognition error, step 350 selects alternative words if necessary, thereby providing a less confusable alternative to the words available to be recognized; column 11 line 34- column 13 line 3).

14. Consider claim 10, Mahajan in view of Yuschik suggests the computer readable storage of claim 9, further comprising the steps of:

(i) generating a test input for the modified grammar, the test input including a test pattern and a set of active grammars for the modified grammar;

(ii) providing the test input for the modified grammar to the voice portal;

(iii) analyzing the test pattern for the modified grammar with respect to the set of active grammars corresponding to the modified grammar with the speech recognition engine in the voice portal;

(iv) deriving a measure of quality of recognition of the modified grammar; and

(v) re-modifying the modified grammar and repeating steps (i) through (iv) until the measure of quality of recognition of the modified grammar does not deviate from a pre-determined range.

This is merely reanalyzing the output of the recognizer after the grammar has been updated. Figure 3 of Yuschik shows that the acoustical analysis of 340 is repeated until the acoustical difference is great enough to allow for accurate speech recognition. These analysis steps (i-iv) are the same of claim 1, which can clearly be accomplished by the method of Mahajan as discussed above, and acoustical distance would obviously effect the result of the analysis. This step would be useful to determine the recognizably of any alternative words entered into the grammar by the modifying step, thereby insuring that the change increased the performance of the recognizer.

15. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan in view of Yuschik as applied to claims 1 and 7 above and further in view of Reich (US PAP 2002/0173955) .

16. Consider claim 2, Mahajan and Yuschik teaches the method of claim 1, Mahajan further teaches including comparing recognition results for the test input with an expected value to assess the measure of quality of recognition (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.). but does not specifically teach wherein said deriving step includes the step of deriving a confidence level and a set of n-best results for the test input, and further comprising the steps of:

comparing the confidence level and set of n-best results for the test input with an expected value to assess the measure of quality of recognition.

In the same field of speech recognition, Reich teaches the step of deriving a confidence level and a set of n-best results for the test input (figure 4 shows step 420, confidence scores are determined, step 460 N best candidates are selected. The N-best candidate with the highest confidence level would inherently exceed the expected value.),

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the confidence scores and N best candidates as taught by Reich and compare them with an expected value to determine a quality of the recognition as taught by Mahajan and Yuschik in order to provide a more robust method of evaluating a recognition system by allowing one to spot ambiguities in the recognition.

Consider claim 8, Mahajan and Yuschik teaches the storage of claim 7, Mahajan further teaches including comparing recognition results for the test input with an expected value to assess the measure of quality of recognition (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.). but does not specifically teach wherein said deriving step includes the step of deriving a confidence level and a set of n-best results for the test input, and further comprising the steps of:

comparing the confidence level and set of n-best results for the test input with an expected value to assess the measure of quality of recognition.

In the same field of speech recognition, Reich teaches the step of deriving a confidence level and a set of n-best results for the test input (figure 4 shows step 420, confidence scores are determined, step 460 N best candidates are selected. The N-best candidate with the highest confidence level would inherently exceed the expected value.),

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the confidence scores and N best candidates as taught by Reich and compare them with an expected value to determine a quality of the recognition as taught by Mahajan and Yuschik in order to provide a more robust method of evaluating a recognition system by allowing one to spot ambiguities in the recognition.

17. Claims 5, 6, 11-13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan in view of Yuschik as applied to claims 1 and 7 above and further in view of Randic (US Patent 6,275,797).

18. Consider claim 5, Mahajan and Yuschik teaches the method of claim 1, but does not specifically teach modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal.

In the same field of speech testing, Randic suggests modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer generation system was configured to produce. Further, it is well known in the art that TTS engines can be configured to allow for the generation of multiple voice types, although the claim language suggest that just one voice could be used.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic in place of the human speaker as taught by Mahajan and Yuschik in order to allow the speech recognizer to become more flexible through the quality analysis.

19. Consider claim 6, Mahajan and Yuschik teaches the method of claim 1, but does not specifically teach modifying the test pattern to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal.

In the same field of speech testing, Randic teaches modifying the test pattern to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal (figure 3 shows passing the voiced speech pattern through a transmission scheme in order to evaluate the effect that the voice channel has on recognition; column 4, line 31- column 7 line 29.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the analysis of the voice channel as taught by Randic with the speech recognition quality evaluation of Mahajan and Yuschik in order to make the speech recognizer more robust.

20. Consider claim 11, Mahajan and Yuschik teaches the computer readable storage of claim 7, but does not specifically teach modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal.

In the same field of speech testing, Randic teaches modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer

generation system was configured to produce. Further, it is well known in the art that TTS engines can be configured to allow for the generation of multiple voice types, although the claim language suggest that just one voice could be used.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic in place of the human speaker as taught by Mahajan and Yuschik in order to allow for more efficient and more accurate quality analysis of the recognizer.

21. Consider claim 12, Mahajan and Yuschik teaches the computer readable storage of claim 7, but does not specifically teach modifying the test pattern to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal.

In the same field of speech testing, Randic suggests modifying the test pattern to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal (figure 3 shows passing the voiced speech pattern through a transmission scheme in order to evaluate the effect that the voice channel has on recognition; column 4, line 31- column 7 line 29.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the analysis of the voice channel as taught by Randic with the speech recognition quality evaluation of Mahajan and Yuschik in order to make the speech recognizer more robust.

22. Consider claim 13, Mahajan teaches a system for evaluating the quality of voice input recognition by a voice system having a speech recognition engine (figure 3), comprising:

an analysis interface for extracting a set of current grammars from the voice system a portion of training text is selected to be spoken 304, Figure 3, Column 5 line 11.);

a test pattern generator for generating a test input for each current grammar, the test input including a test pattern and a set of active grammars corresponding to each current grammar (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal; Column 5 line 11.); ;

an apparatus for entering each test pattern into the voice system (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal; Column 5 line 11.);

a results collector for analyzing each test pattern entered into the voice system with the speech recognition engine against the set of active grammars corresponding to the current grammar for said test pattern (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37.); and

a results analyzer for deriving a set of statistics of a quality of recognition of each current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from

the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.).

However Mahajan does not specifically teach that the voice system is a voice portal or using a text to speech engine to enter data into the voice porthole.

In the same field of speech systems, Yuschik teaches that the voice system is a voice portal (It is an object of the invention to design and select the vocabulary for a voice activated system (portal) column 3, line 7-20. The menus of the portal are shown in figure 4.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention for a voice portal to be the voice system being tested and developed as taught by Yuschik with the testing system of Mahajan in order to allow for voice portals to be adapted to the users spoken languages, Yuschik column 2 line 57.

But Mahajan and Yuschik does not teach specifically using a text to speech engine to enter data into the voice porthole.

In the same field of speech signal testing, Randic teaches using a text to speech engine to generate test signals for a system (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer generation system was configured to produce.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic in place of the human speaker as taught by Mahajan in order to allow for more efficient and more comprehensive quality analysis of the recognizer.

23. Consider claim 15, Mahajan and Yuschik in view of Randic teaches the system of claim 13, but does not specifically teach modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal.

However Randic teaches modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer generation system was configured to produce. Further, it is well known in the art that TTS engines can be configured to allow for the generation of multiple voice types, although the claim language suggest that just one voice could be used.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic to emulate a user voice in order to allow for more efficient and more accurate quality analysis of the recognizer.

24. Consider claim 16, Mahajan teaches the system of claim 13, wherein the test pattern generator is modified to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal. (figure 3 shows passing the voiced speech pattern through a transmission scheme in order to evaluate the effect that the voice channel has on recognition; column 4, line 31- column 7 line 29.).

25. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan in view of Yuschik in view of Randic as applied to claim 13 above, and further in view of Reich.

26. Consider claim 14, Mahajan in view of Randic teaches the system of claim 13, including comparing recognition results for the test input with an expected value to assess the measure of quality of recognition for each current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.). but does not specifically teach that the statistics include a confidence level and a set of n-best results for each test input.

In the same field of speech recognition, Reich teaches the step of deriving a confidence level and a set of n-best results for the test input (figure 4 shows step 420, confidence scores are determined, step 460 N best candidates are selected.),

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the confidence scores and N best candidates as taught by Reich and compare them with an expected value to determine a quality of the recognition as taught by Mahajan in view of Yuschik in view of Randic in order to provide a more robust method of evaluating a recognition system by allowing one to spot ambiguities in the recognition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas C. Godbold whose telephone number is (571) 270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

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